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A Data Locality Optimizing Algorithm

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Min Zhao, Bruce Childers, Mary Lou Soffa

 June 2003 **ACM SIGPLAN Notices , Proceedings of the 2003 ACM SIGPLAN conference on Language, compiler, and tool for embedded systems**, Volume 38 Issue 7

 Full text available: [pdf\(281.53 KB\)](#) Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

When applying optimizations, a number of decisions are made using fixed strategies, such as always applying an optimization if it is applicable, applying optimizations in a fixed order and assuming a fixed configuration for optimizations such as tile size and loop unrolling factor. While it is widely recognized that these fixed strategies may not be the most appropriate for producing high quality code, especially for embedded systems, there are no general and automatic strategies that do otherwi ...

Keywords: code models, embedded systems, loop optimizations, optimization models, optimizing compilers, prediction, resource models

2 [Achieving Scalable Locality with Time Skewing](#)

David Wonnacott

 June 2002 **International Journal of Parallel Programming**, Volume 30 Issue 3

 Full text available: [Publisher Site](#) Additional Information: [full citation](#), [abstract](#), [index terms](#)

Microprocessor speed has been growing exponentially faster than memory system speed in the recent past. This paper explores the long term implications of this trend. We define *scalable locality*, which measures our ability to apply ever faster processors to increasingly large problems (just as *scalable parallelism* measures our ability to apply more numerous processors to larger problems). We provide an algorithm called *time skewing* that derives an execution order and stora ...

Keywords: compute balance, machine balance, memory locality, scalable locality, storage transformation

3 [Memory hierarchy: Exploiting bank locality in multi-bank memories](#)

G. Chen, M. Kandemir, H. Saputra, M. J. Irwin

 October 2003 **Proceedings of the international conference on Compilers, architectures and synthesis for embedded systems**

 Additional Information: [full citation](#), [abstract](#), [references](#), [index terms](#)

Bank locality can be defined as localizing the number of load/store accesses to a small set of memory banks at a given time. An optimizing compiler can modify a given input code to improve its bank locality. There are several practical advantages of enhancing bank locality,